

# Compact, Low-Cost, Frequency-Locked Semiconductor Laser for Injection Seeding High Power Laser, Phase II

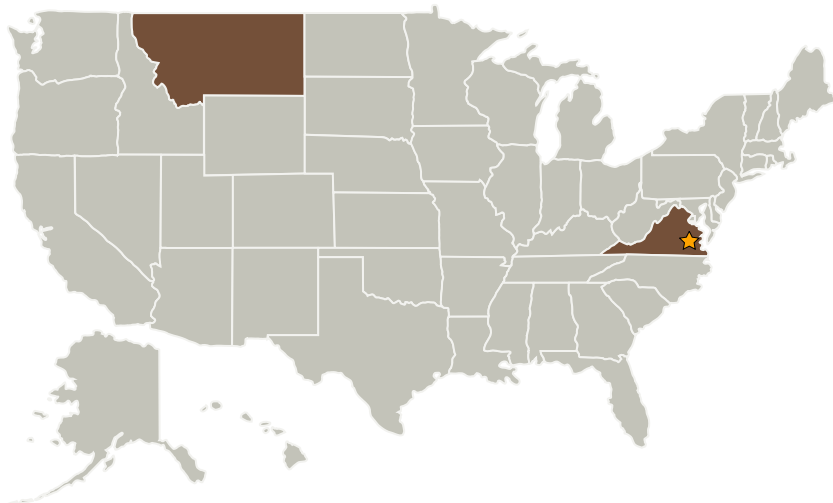
Completed Technology Project (2004 - 2006)



## Project Introduction

This NASA Small Business Innovative Research Phase II project will develop a compact, low-cost, wavelength locked seed laser for injection locking high powered Nd:YAG lasers used in a range of lidar remote sensing applications including molecular profiling of the atmosphere. Precise wavelength control of the seed laser will be achieved by actively locking the laser wavelength to an absorption line in molecular iodine. The key innovation in this SBIR effort is the use of nonlinear optical waveguides both to frequency modulate and to frequency double a portion of the seed laser beam to generate the appropriate optical signal for locking to the iodine absorption line. Using an all-waveguide based approach will result in a compact, robust package that will withstand temperature, shock, and vibration levels associated with NASA's airborne and space based remote sensing platforms.

## Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Langley Research Center(LaRC)	Lead Organization	NASA Center	Hampton, Virginia
ADVR, Inc.	Supporting Organization	Industry	Bozeman, Montana



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## Organizational Responsibility

### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

### Lead Center / Facility:

Langley Research Center (LaRC)

### Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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## Primary U.S. Work Locations

Montana

Virginia

## Project Management

### Program Director:

Jason L Kessler

### Program Manager:

Carlos Torrez

## Technology Areas

### Primary:

- TX08 Sensors and Instruments
  - └ TX08.1 Remote Sensing Instruments/Sensors
  - └ TX08.1.5 Lasers